

SAN FRANCISCO BAY CONSERVATION AND DEVELOPMENT COMMISSION
Thirty Van Ness Avenue, San Francisco 94102 557 - 3686

September 4, 1987
(As revised on September 21, 1987)

TO: All Commissioners and Alternates
FROM: Alan R. Pendleton, Executive Director

SUBJECT: COMMISSION COMMENTS ON IMPACTS OF FRESHWATER
INFLOW ON SAN FRANCISCO BAY FOR THE BAY/DELTA
HEARINGS OF THE STATE WATER RESOURCES CONTROL BOARD
(For Commission consideration on September 17, 1987)

Staff Recommendation

The staff recommends that the Commission direct the staff to present as evidence the statement attached to this staff report for use in the State Water Resources Control Board's Bay/Delta Estuary hearings (Phase I topic -- "Impacts of Freshwater Inflow on San Francisco Bay").

Staff Report

1. Background

The San Francisco Bay/Sacramento-San Joaquin River Delta Estuary (Bay/Delta Estuary) includes the Delta, the Suisun Marsh, and San Francisco Bay. The Delta and Suisun Marsh are located where California's two major river systems converge and meet the seawater flowing from the Pacific Ocean through San Francisco Bay. The Bay/Delta Estuary is one of the largest and most important estuaries for fish and wildlife production along the West Coast.

The watershed of the Bay/Delta Estuary also provides about two-thirds of all the water used in the State, including municipal, industrial, and agricultural uses. Federal and State water distribution systems both export water from the Delta to the Central Valley and Southern California, and numerous other water development projects also modify the river inflows to the Estuary. All of these water development projects are regulated by the State Water Resources Control Board (the State Board) to protect the beneficial uses of the Estuary. The beneficial uses include municipal, industrial and domestic water supply, agricultural supply, navigation, contact and non-contact water recreation, commercial and sport fishing, wildlife habitat, marine and estuarine habitat, fish migration and spawning, and shellfish harvesting.

In 1978, the State Board adopted two documents which set forth comprehensive water quality and flow standards for the Sacramento-San Joaquin River Delta and the Suisun Marsh, the Delta Water Quality Control Plan (Delta Plan) and Water Right Decision 1485 (D-1485). However, these water quality standards apply to salinity only. Also, the State Board did not set standards to protect San Francisco Bay. During the next three years, the State Board will be holding hearings to review and refine as necessary the water quality standards for the Bay/Delta Estuary set in these two documents and will consider setting standards for the Bay.

The State Board created a hearing process that not only includes its triennial review of the Delta Plan and D-1485, but also one that takes into account the appellate court decision on the D-1485 Delta water cases (called the Racanelli decision), which held that the State Board must consider all upstream diverters, not just the state and federal water projects, in its deliberations on water rights and Bay/Delta standards and that protecting beneficial uses is a principal focus of the State Board when it considers water rights. In addition, the Racanelli decision clarified that the State Board must consider the public trust in setting standards to protect the beneficial uses of the Bay/Delta Estuary. The Commission and the State Lands Commission share co-trustee responsibilities with the State Board in protecting the Bay/Delta Estuary and the McAteer-Petris Act is a further declaration by the Legislature as to what the trust means for San Francisco Bay and the Suisun Marsh.

The hearing process has been broken down into three phases: in Phase I the State Board will receive evidence on the beneficial uses of the Bay/Delta Estuary, the reasonable levels of protection for these beneficial uses, and the reasonableness of the use of water derived from and upstream of the Estuary; in Phase II the State Board will receive evidence on a draft salinity control plan and pollutant policy document for the Estuary prepared by the State Board staff; and in Phase III the State Board will receive evidence on the impacts of the water quality attainment alternatives and any other information needed to reach a water right decision. The State Board staff will develop the final water quality control plan and water right decision, and an environmental impact report for these documents. Exhibit 1 (which is Table I from the State Board's "Workplan for the Hearing Process") delineates the phases and topics to be addressed in the hearing process.

Within Phase I of the hearing process, the staff and the Commission's consultants will be concentrating on those issues on which the Commission has the most expertise and direct policy involvement. Therefore, during the Phase I hearings the staff will be presenting to the Commission separate reports on the topics of "Bay/Delta Estuary Uses: Wildlife," "Impacts of Freshwater Inflow on San Francisco Bay," and "Program of Implementation." The topic of this second staff report is "Impacts of Freshwater Inflow on San Francisco Bay," for which the Commission has received a report entitled "An Overview of Flow and Salinity Standards Required to Protect the Ecosystem of San Francisco Bay," dated September 2, 1987, as revised on September 19, 1987, prepared by Dr. Philip B. Williams, of Philip B. Williams & Associates, and Dr. Michael Josselyn, of Wetlands Research Associates.

2. Consultants' Report

Using studies and documents prepared by scientists from the U. S. Geological Survey, U. S. Fish and Wildlife Service, California Department of Fish and Game, California Department of Water Resources, the State Water Resources Control Board, university scientists, and their own research, the consultants' report describes historic changes in the San Francisco Bay/Delta Estuary. It also explains in general terms how the Bay/Delta Estuary functions in terms of its hydrology and hydrodynamics, nutrients, phytoplanktonic and zooplanktonic resources, benthic organisms, and fish and wildlife resources. Finally, the report provides an analysis of how the Estuary should be managed to preserve and enhance the diversity and abundance of all the estuarine organisms, from algae to waterfowl.

Briefly, the report concludes that the Bay/Delta Estuary has been severely degraded by the loss of wetlands, pollution, and reductions from 28 to 14 million acre-feet per year in freshwater inflow (primarily to diversions for irrigation). Another 3 million acre-feet of diversions are proposed to meet the full entitlements of the State Water Project, and more diversions are possible if additional Central Valley Project components are constructed. The reduction of inflow and other upstream water regulation have significantly affected the Estuary in the following ways: (a) reduced the anadromous salmon fishery by preventing outmigration in the Spring, eliminating riparian wetlands, destroying spawning habitat, and reversing flows in the Delta channels; (b) reduced the striped bass population by shifting spawning habitat upstream, reducing the survival rate of young fish and entraining young fish into the export pumps; (c) shifted the location of the entrapment zone, thereby reducing the abundance of phytoplankton, the base of the food chain on which shrimp, clams, fish, and waterfowl depend; (d) affected waterfowl and other wildlife habitat by causing diked and tidal wetlands to shift from brackish to saline conditions; and (e) allowed the accumulation of toxic pollutants in clams and shellfish in the South Bay due to the reduction of flushing action in the Winter and Spring.

The report also concludes that, while the Bay may have received some benefit from D-1485, the flow and salinity standards enacted in D-1485 were not specifically designed to protect San Francisco Bay and have proven inadequate for protecting the fish and wildlife resources of the Delta and Suisun Marsh. In order to protect and enhance the entire Bay/Delta Estuary, new flow and salinity standards are required, as well as a reduction in pollutants and protection and restoration of tidal wetlands. These standards should be designed to protect the functioning of the ecosystem as well as protecting individual species such as striped bass and salmon. To be effective, these standards may conflict with existing or planned future use of freshwater for irrigation supply.

The consultants specifically recommend the following:

- a. Revision of the existing flow standard to provide greater Sacramento River flows to allow outmigration of salmon in the Spring;

- b. Enactment of a new flow standard for the lower San Joaquin River to allow outmigration of salmon in the Spring;
- c. Enactment of a new flow standard to eliminate or significantly reduce flow reversals in Delta channels due to export pumping to protect salmon and striped bass;
- d. Revision of the existing D-1485 flow standards to protect striped bass spawning and survival and to restore them to historic levels;
- e. Enactment of a new salinity standard to maximize phytoplankton abundance in the late Spring and Summer by positioning the entrapment zone in Suisun Bay;
- f. Enactment of a new salinity standard to maximize phytoplankton abundance in the Spring and Summer by preventing the establishment of marine benthic organisms in Suisun Bay;
- g. Re-enactment of the original salinity standards instituted under D-1485 to protect managed brackish wetlands and waterfowl around Suisun Bay (as previously recommended);
- h. Enactment of a new salinity standard to protect brackish tidal wetlands and their associated wildlife around Suisun Bay (as previously recommended);
- i. Enactment of a new flow standard to maximize phytoplankton abundance in San Pablo Bay during the Spring;
- j. Enactment of a new salinity standard to maximize phytoplankton productivity in the South Bay during the Spring; and
- k. Enactment of a new salinity standard to minimize residence times of pollutants in the South Bay in the Winter and Spring.

3. Conclusion

The staff agrees with the conclusions and recommendations of the consultants and has prepared the comments attached as Exhibit 2 for presentation to the State Board at its Phase I hearing on "Impacts of Freshwater Inflow on San Francisco Bay" on November 23, 24, and 25, 1987. The staff is prepared to offer the attached comments into evidence at the hearing, incorporating the consultants' report and this staff report, as both have been revised, into the testimony by reference. The staff will be supported at the hearing by the consultants as necessary.

TABLE I

TOPICS FOR THE BAY-DELTA HEARING

PHASE I

1. Hydrologic Conditions
2. Uses Within the Bay-Delta Estuary
 - A. Agricultural
 - B. Municipal and Industrial
 - C. Wildlife
 - D. Striped Bass Fishery
 - E. Chinook Salmon Fishery
 - F. Other Migrating and Resident Fish
3. Uses Within Export Areas
 - A. Agricultural
 - B. Municipal and Industrial
 - C. Other Uses
4. Uses Upstream of the Bay-Delta Estuary
 - A. Agricultural
 - B. Municipal and Industrial
 - C. Other Uses
5. Impacts of Freshwater Inflow on San Francisco Bay
6. Pollutants in the Bay-Delta Estuary
7. Program of Implementation

PHASE II

1. Pollutant Policy Document
2. Draft Water Quality Control Plan for Salinity in the Bay-Delta Estuary

PHASE III.

1. Impacts of Attainment Alternatives
2. Other Information Needed for a Water Right Decision

SAN FRANCISCO BAY CONSERVATION AND DEVELOPMENT COMMISSION
Thirty Van Ness Avenue, San Francisco 94102 557 - 3686

September 24, 1987

TESTIMONY TO THE
STATE WATER RESOURCES CONTROL BOARD
ON
"IMPACTS OF FRESHWATER INFLOW ON
SAN FRANCISCO BAY" FOR THE PHASE I HEARINGS

My name is Steven McAdam, Assistant Executive Director of the San Francisco Bay Conservation and Development Commission. On September 17, 1987, the Commission authorized me to present these comments to the State Water Resources Control Board during the Phase I hearing on "Impacts of Freshwater Inflow on San Francisco Bay." The Commission's testimony derives from its policies in the McAteer-Petris Act, the San Francisco Bay Plan, the Suisun Marsh Preservation Act, and the Suisun Marsh Protection Plan. We hope that it is helpful and fully appreciated by the Board in determining the impacts of and requirements for freshwater inflow to San Francisco Bay.

The Commission is mandated to protect San Francisco Bay and the Suisun Marsh, and their water quality and fish and wildlife resources, under the McAteer-Petris Act, the Suisun Marsh Preservation Act, and the federal Coastal Zone Management Act. As you know, the appellate court decision on the D-1485 Delta water cases (called the Racanelli decision) held, among other things, that protecting the beneficial uses of the Bay/Delta Estuary is a principal focus of the State Board when it considers water rights. In addition, the Racanelli decision clarified that the State Board must consider the public trust in setting standards to protect the beneficial uses of the Bay/Delta Estuary. The Commission and the State Lands Commission share co-trustee

responsibilities with the State Board in protecting the Bay/Delta Estuary and the McAteer-Petris Act is a further declaration by the Legislature as to what the trust means for San Francisco Bay and the Suisun Marsh. The Commission asks that the State Board take the McAteer-Petris Act specifically into its record.

In my comments to you today, I will be referring to the report prepared for the Commission by Dr. Philip B. Williams and Dr. Michael Josselyn, entitled "An Overview of Flow and Salinity Standards Required to Protect the Ecosystem of San Francisco Bay," dated September 2, 1987, as revised. We wish to incorporate this report, as well as our staff report to the Commission dated September 4, 1987, as revised, into our testimony as exhibits.

San Francisco Bay is the largest estuary on the Pacific Coast of the North and South America continents and is one of the world's most important natural resources. The marshes and mudflats along the shoreline of the Bay are sources of food and shelter to a wide variety of fish and wildlife. Hundreds of thousands of birds migrating between the Arctic and South America use the Bay as a resting and feeding place. Over a million of water birds visit the Bay each year. The Suisun Marsh, which alone comprises almost ten percent of the remaining wetlands in California, is a particularly valuable habitat and is critically important to waterfowl during drought conditions. Salmon and other anadromous fish move through the Bay each year. Thousands of other birds, fish, reptiles, amphibians, and marine and other types of mammals thrive in the Bay/Delta Estuary.

The Bay makes many contributions to the welfare of mankind. Its fisheries provide food and recreation for some people and an economic livelihood for others. It provides salt for people and industry. It is one of the world's

great natural harbors and military installations. It is essential to many ports and shorefront industries. Its beauty and fish and wildlife resources delight residents and visitors, hunters and fishermen. It helps make the Bay Area one of this country's most desirable places to live.

The importance of San Francisco Bay and the Suisun Marsh is documented in many academic and governmental studies, including the Commission's own San Francisco Bay Plan and Suisun Marsh Protection Plan, their background reports, and our consultants' report. Thus, we refer you to those documents and studies at this time.

The San Francisco Bay Plan recognizes the delicate relationship between fresh and salt water and its ability to support a diversity of marine life and waterfowl in and around the Bay. The Bay Plan also recognizes that freshwater inflow is an important source of the oxygen necessary in the waters of the Bay to support marine life and to abate pollution, and it assists in flushing parts of the Bay system, particularly during peak flows of the Spring. Therefore, the Bay Plan states that diversions of freshwater should not reduce the freshwater inflow into the Bay to the point of damaging the oxygen content of the Bay, the flushing of the Bay, or the ability of the Bay to support existing wildlife.

The Suisun Marsh Protection Plan states that adequate supplies of freshwater are essential to the maintenance of water quality in the Suisun Marsh. The Protection Plan also states that water quality standards in the Marsh should be met by maintaining adequate inflows from the Delta. Until the environmental impacts of increased salinity in the Marsh and increased diversions for the State Water Project and the Central Valley project are known, the Protection Plan states that there should be no increase in

diversions that would violate the existing Delta Plan and D-1485 standards. While the Commission is responsible for overseeing the management and protection of the Marsh from a land use perspective, it must rely upon the State Board to regulate water quality by setting flow and salinity standards that will adequately protect the wetland habitats of the Marsh.

The San Francisco Bay/Delta estuarine system has been severely degraded by the loss of wetlands, pollution, and reductions in freshwater inflow. Of importance to this hearing, the existing reduction in Spring and Summer flows into the Bay, combined with the effects of water regulation upstream, has had many significant adverse effects on the estuary, including: (1) reducing the anadromous salmon fishery by preventing outmigration in the Spring, eliminating riparian wetlands, destroying spawning habitat, and reversing flows in the Delta channels; (2) reducing the striped bass population by shifting spawning habitat upstream, reducing the survival of young fish and entraining young fish into the export pumps; (3) shifting the location of the entrapment zone, thereby reducing the abundance of phytoplankton, the base of the food chain on which shrimp, clams, fish, and waterfowl depend; (4) affecting waterfowl and other wildlife habitat by causing diked and tidal wetlands to shift from brackish to saline conditions; and (5) allowing the accumulation of toxic pollutants in clams and shellfish in the South Bay due to the reduction of flushing action in the Winter and Spring.

The flow and salinity standards enacted in Decision 1485 were not specifically designed to protect San Francisco Bay and have proven inadequate for protecting the fish and wildlife resources of the Delta and Suisun Marsh. In order to protect and enhance the Bay/Delta Estuary, new flow and salinity standards are required, as well as a reduction in pollutants and protection

and restoration of tidal wetlands. These standards should be designed to protect the functioning of the ecosystem as well as protecting individual species such as striped bass and salmon.

The Commission recommends that the State Board do the following:

1. Revise the existing flow standard to provide greater Sacramento River flows to allow outmigration of salmon in the Spring;
2. Enact a new flow standard for the lower San Joaquin River to allow outmigration of salmon in the Spring;
3. Enact a new flow standard to eliminate or significantly reduce flow reversals in Delta channels due to export pumping to protect salmon and striped bass;
4. Revise the existing D-1485 flow standards to protect striped bass spawning and survival and to restore them to historic levels;
5. Enact a new salinity standard to maximize phytoplankton abundance in the late Spring and Summer by positioning the entrapment zone in Suisun Bay;
6. Enact a new salinity standard to maximize phytoplankton abundance in the Spring and Summer by preventing the establishment of marine benthic organisms in Suisun Bay;
7. Re-enact the original salinity standard instituted under D-1485 to protect managed brackish wetlands and waterfowl around Suisun Bay (as previously recommended);

8. Enact a new salinity standard to protect brackish tidal wetlands and their associated wildlife around Suisun Bay (as previously recommended);
9. Enact a new flow standard to maximize phytoplankton abundance in San Pablo Bay during the Spring;
10. Enact a new salinity standard to maximize phytoplankton productivity in the South Bay during the Spring; and
11. Enact a new salinity standard to minimize residence times of pollutants in the South Bay in the Winter and Spring.